United States Department of Agriculture

Soil Conservation Service

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Conservation Assistance Around the World

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The United States Department of Agriculture (USDA) is a world leader in solving agricultural problems. Every nation draws its strength primarily from its agriculture, and the main foundation for agricultural prosperity is the conservation and wise use of natural resources—soil and water.

USDA is playing an increasingly important role in the international arena through the Agency for International Development (AID) and other international organizations.

Within USDA, the Soil Conservation Service (SCS) has technical responsibility for the conservation of natural resources, including soil and water. For more than 50 years, SCS has been helping to solve natural resource problems by providing technical assistance and training to individuals,

SCS scientists worked with the Government of The Gambia, in West Africa, to set up a Soil and Water Management Unit that helps farmers combat soil erosion and water pollution. The Gambian agency, which now serves as a model for similar units in other African nations, has established projects throughout the country—projects to curb flooding, soil erosion, sedimentation, and salt water intrusion. Hundreds of farmers have seen the positive results, and word has spread to thousands of others (fig. 1).

Figure 1.
A soil survey team in The Gambia determines soil types on cleared agricultural land.

municipalities, and governments on reducing the costly waste of land and water resources.

SCS is recognized internationally as an authority on soil and water conservation and soil surveys. Technical specialists of the agency are called on continually by AID and other international organizations to share conservation knowledge with countries that suffer from acute soil and water problems.

Technical assistance for conservation problems

Throughout the world, many real and potentially damaging soil and water resource problems exist. Erosion, flooding, crop losses, unsafe and undependable water supplies, sedimentation, deforestation, and related problems threaten the prosperity of individuals and nations. SCS offers practical, customized technical assistance to those who are responsible for solving these problems. The assistance is provided through agreements between USDA, AID, and other international organizations.

Over the years, the agency has developed and successfully applied agronomic, engineering, and soils information to a wide variety of soil and water resource problems. Today, SCS sets the standards in resource conservation for much of the world.

SCS is involved in the exchange of scientific and technical information with countries that have soil and water conservation problems similar to those in the United States. The most recent SCS scientific and technological exchanges include: Australia—range science, geographic information systems, remote sensing, resource inventory, plant materials; Bulgaria—agriculture and environmental quality integration; China—windbreaks, watershed management, soil and water resource utilization; Denmark—soil and water conservation; France—evaluating offsite effects of soil and water conservation measures in project areas; Hungary—environmental assessment of agriculture activities: technical and institutional approaches; Ireland—pasture management; Thailand—conservation sciences and technology; and Venezuela—strategies for controlling soil erosion and sedimentation resulting from high-intensity rainfall on cropland.

The approach

SCS's goal is to use land both within its capabilities and in harmony with nature. This approach allows the needs of present users to be met and also conserves the land for the use of future generations.

Indonesians are determined not only to grow their own food, but also to conduct their own soil surveys and manage their own resources. As the population has grown, crop production has expanded from the rice-producing lowlands to the steep, rain-fed (nonirrigated) lower mountain slopes where food crops other than rice are grown. But on this steep land, erosion is very high, yields are low, and the need for advanced agricultural technology is great. These upland areas are the target of the U.S. Agency for International Development's (USAID) Upland Agriculture and Conservation Project (UACP) in Indonesia (fig. 2).

SCS has provided technical assistance to the UCAP since 1985. In the early phases of the project, SCS soil conservationists identified a critical need for soil survey data. The Indonesian farmers needed adequate soil survey data to farm the lower mountain slopes successfully. The data would help them select suitable crops and plan and apply effective conservation practices.

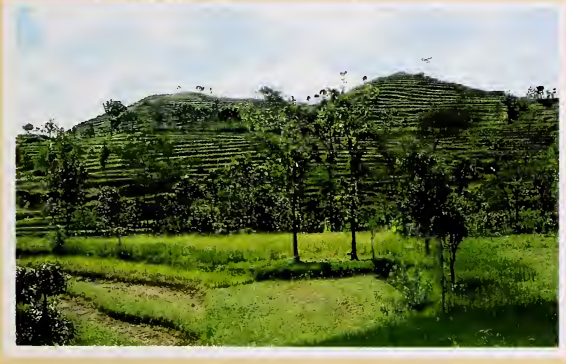

Figure 2.
If properly applied, practices such as these bench terraces in the Salatiga Area Demonstration Plot in Central Java can help farmers grow crops and protect the soil from erosion.

As part of its approach to conservation, SCS emphasizes:

Technology transfer
Personnel development
Technical assistance

SCS conservationists provide assistance to officials and technicians in other countries to help organize and implement conservation programs. SCS also develops technical assistance and training for countries that have ongoing projects dealing with soil conservation, land management, soil survey activities, and watershed management.

Training programs can be conducted either in the host country or in SCS's State and field offices. SCS designs individual or group training programs through a combination of field work and office assignments. Programs are structured to meet individual needs or objectives and may be short or intermediate in duration.

Types of assistance

SCS offers technical assistance and training in the core areas of engineering, agronomy, soil science, and several related areas. Additionally, many staff members have the ability to conduct their work in languages other than English.

In 1981, the Dominican Republic asked for SCS's assistance in developing a natural resources management program. SCS sent a team of Spanish-speaking professionals from neighboring Puerto Rico, where SCS has dealt with similar resource problems for 40 years. Each year since 1981, SCS has provided direct field assistance to Dominican farmers and has trained Dominican technical and professional staff in soils, conservation planning, technical guides, engineering and operations management (figs. 3 and 4).

Figure 3.
These Dominican farmers use rocks and lemon grass to build terraces.

Figure 4.
SCS personnel consult with various government officials in the Dominican Republic about effective methods of controlling erosion.

Engineering

A descriptive term for the type of technical assistance and training SCS provides is "applied engineering." From contour terraces installed using the simplest of tools—three sticks, a rock, a string, and a pick—to complex dams designed with the help of computers, SCS uses technology appropriate for the situation.

SCS also assists in such areas as the design and construction of livestock watering facilities, irrigation systems, open channels, and structures for water control. Information is also available on waste management, precision landforming, building hillside ditches, and numerous other subjects.

SCS has worked closely with the Mexican Government's Program for Integrated Rural Development of the Humid Tropics. The goal of this program is to bring all components of development for an area—such as roads, drains, health services, education, increased crop production, and soil and water conservation—into one coordinated plan. Agricultural successes in the project's six pilot areas include an increase in crop area by about 40,000 hectares; an increase in maize yields of about 60 percent (as compared to an increase of about 20 percent outside the pilot areas); and the formation of about 50 small poultry, sheep, bakery, and other farm-related enterprises.

In 1980, the U.S. Government agreed to assist the Government of Peru in establishing a Soil Conservation System. SCS provided the technical assistance during this 6-year project which emphasized helping small-scale Andean farmers install conservation practices on their farms. This highly successful project continues today, as Peruvian conservationists work the full length of the Andes, helping rural communities and individuals conserve their soil and water resources (fig. 5).

Figure 5.
As part of a community project, these Peruvians work together to build level branch terraces.

Agronomy

When economic considerations are paramount, low-cost (or even no-cost) agronomic solutions to soil and water conservation problems can often be found.

SCS has expertise in contour stripcropping, windbreaks, filter strips, tree planting, chiseling and subsoiling, stubble mulching, crop rotation, and range and pasture management.

In the area of range and pasture management alone, SCS has developed standards and specifications for 15 separate conservation practices.

Recognizing that vegetation is a key component of soil and water conservation efforts, SCS operates plant materials centers to develop needed conservation plants and the technology for their use.

Soils

A key ingredient to successful conservation is knowledge of the soils. Soil surveys provide maps and describe the physical and chemical characteristics of the soil in the survey area. Soil surveys can be used by farmers, ranchers, government officials, engineers, contractors, developers, builders, and others who make land use decisions.

SCS provides training and technical assistance leading to the establishment and operation of a soil survey program. Assistance can include the following: planning the level of detail and time-phased field work; interpreting aerial photographs and climatic data; classifying soil units; designing map legends; conducting field mapping; interpreting soil units for both agricultural and nonagricultural uses; coordinating classification with interpretation activities; and providing technical recommendations for further work.

Other assistance available

In addition to the above activities, SCS also provides training and technical assistance in:

Conservation planning: SCS assists communities and land users in the technical planning and implementation of practical methods to conserve and manage soil and water resources.

Watershed protection techniques: SCS helps local organizations plan and install water-control measures, such as dams, dikes, and other structures, to protect small watersheds from erosion and sediment damage and to reduce upstream flooding. These projects also conserve water, provide water

supplies, increase opportunities for recreation, and improve fish and wildlife habitat.

Evaluating resource problems: SCS trains local people to evaluate resource problems in order to develop and shape programs that respond effectively to these problems. Resources evaluated include the wide range of resource areas associated with agriculture; for example, soil erosion and land productivity, water quality, fish and wildlife habitat, and the effects of resource problems on farms and farm income.

Planning critical area treatment: SCS helps land users to identify severely eroded areas and to determine the most practical method of protecting these areas. Usually, the treatment involves planting trees or permanent grass cover.

Livestock waste management: SCS helps livestock producers plan and design livestock waste management systems. Systems include either storage or treatment components and waste utilization, usually by recycling on farmland. SCS also trains local managers in the operation and maintenance of the livestock waste management system.

Land treatment approach to watershed protection: SCS designs and helps land users put in place such treatment measures as terraces and conservation tillage systems to protect land from erosion, prevent the downstream accumulation of sediment, and reduce flooding.

By providing technical assistance, SCS is helping people throughout the world conserve and improve their natural resources, thereby providing a stable foundation for sustainable and prosperous agriculture for the future (fig. 6).

Figure 6.
Children represent the importance of conserving natural resources, to provide hope for a prosperous future for the world.

For more information

If you are interested in finding out more about the services SCS has to offer, please write or call.

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